

37 CFR 1.135. The fee under 37 CFR 1.17 should be charged to our Deposit Account No. 50-2215.

REMARKS

Before the present invention, conductive inks and coatings were primarily based on solvent or water borne-thermal evaporated drying or on 2-component cross linking technology. While those compositions had high conductivity, they are slow drying and not suitable for high speed printing presses, as well as having other disadvantages. Energy cure systems have been made but these typically have significantly higher resistivity and reduced conductivity values compared to solvent or water-borne evaporated drying products. To achieve improved conductivity, increased pigment loadings were required which increased cost, and had a significant effect on the rheology and printability of the composition. The present invention is based, *inter alia*, on the discovery that the use of water-containing energy cure technology can resolve the problems of the prior art and enable the production of conductive inks which gave good print definition, adhesion and which can be applied usefully by a high speed printing presses. The invention is not taught or suggested.

At several places, the Office Action takes the position that claim 1 is open to the presence of particulate electrically conducted material other than metals and metal oxides, or mixtures, because the claim recites "energy-curable coating composition comprising", and the word "comprising" is open ended. It is respectfully submitted that this interpretation is not valid and does not consider the claim as a whole in that it stops consideration at the fifth word in the claim. The interpretation in the Office Action would have been correct if the claim had called (as it did prior to the previous amendment) for a

composition comprising binder particulate electrically conducted material, water and optionally a photo-initiator but that is not a fair reading of the claim. The claim explicitly states that the particulate electrically conducted material is one "consisting of a metal or metal oxide or mixture thereof". The language "consisting of" must have a meaning and it is well established that this language closes the definition of the particulate electrically conductive material to metals or metal oxides and mixtures of them. The limitation of the particulate electrically conductive material in the composition to the metal and or metal oxides is reinforced by the fact that the original claim did not contain the "consisting of" phrase and the remarks accompanying that amendment explicitly stated that the claims required the conductive material be it metal or metal oxide or a mixture thereof.

Applicants are prepared to reword claim 1 so that it states more explicitly that any particulate electrically conductive material in the composition consists of a metal or metal oxide or mixture thereof if the Examiner so desires. No such amendment has been made above to avoid any possibility that such a change would be deemed to change the scope of the claims (when in fact it does not) and be refused entry.

Claims 1-4, 12, 22, 23, 25 and 26 were rejected under 35 U.S.C. 102 and claims 13-21 and 24 under 35 U.S.C. 103 over Legrande. These rejections are respectfully traversed.

The Legrande reference relates to a coating composition having electrically conductive and/or electromagnetically absorption properties because it is a unique combination of binder containing a first emulsion containing a diene and a second emulsion containing an acrylic polymer, and "effective amount" of electrically conducted particles dispersed in the binder provided that those particles are a combination of graphite and metal containing particles, and water. It is pointed out on page 10 of this

reference that the combination of graphite and metal particles avoid the detrimental characteristics found in the prior art. On page 13, it is pointed out that the coating composition is an evaporated cure type composition, i.e., it cures by air drying at ambient temperature. Also, on page 15, it is pointed out that the chemistry of the coating composition is created a unique combination of chemical resistance and adhesion properties. It is noted that the working examples all contain an amount of conductive material (graphite plus metal) which is less than 40% and conductivity is at least 1.5 ohms per square.

The anticipation rejection based on Legrande is not tenable with respect to the claims for at least two reasons. First, the claims require the conductive material to be metal or metal oxide or a mixture thereof whereas Legrande requires the presence of graphite. The "consisting of" language in claim 1 excludes the possible presence of graphite. Secondly, the claims require a resistivity of no greater than 1 ohm per square. The claims are also not obvious over Legrande because, *inter alia*, Legrande requires a critical combination containing graphite and the claimed invention omits that critical ingredient.

In light of the foregoing deficiencies, it is respectfully submitted that the other assertions made in the Office Action indeed not be addressed.

Claims 5 and 6 were rejected under 35 U.S.C. 103 over Legrande in view of Durand. This rejection is also respectfully traversed.

Legrande has been discussed above. It also does not, as the Examiner has acknowledged, teach a binder containing certain ingredients and Durand has been cited to cure that deficiency. Durand does not teach or suggest that Legrande's graphite, which

Legrande teaches to be critical, can be omitted and on that basis alone, the rejection is untenable. References cannot be combined if the effect would destroy the invention on which one of the reference patents is based, *In re Hartmann*, 186 USPQ 366 (Bd. App. 1974), and the proposed combination would do so. Further, Legrande is a physically dried composition whereas Durand is a UV curable composition and no reason has been advanced nor is any apparent which would cause one skilled in the art to incorporate a Durand UV curable system into the Legrande composition. This second deficiency is sought to be overcome by asserting that the references are in the "same field of endeavor, namely conductive ink" but that is not a reason to modify the Legrande composition nor is the assertion correct. Legrande states over and over again that his composition is a coating composition, not an "ink". As previously noted and as discussed in the opening paragraphs of the application, there is an art recognized significant difference between physically dried and radiation curable compositions in this art.

Claims 7-10, 27 and 28 were rejected under 35 U.S.C. 103 over Legrande in view of Batting.

This rejection is based on the same reasoning, with one exception, as the combination rejection involving Durand with the Batting reference being cited to teach particular UV curable inks. It is therefore untenable for the same reasons. The "exception" is the assertion that these two references are combinable because they are in the same field of endeavor, "name UV curable inks" but that assertion is wrong. Not only does Legrande fail to teach or suggest an ink, but it also fails to teach or suggest a UV curable composition of any kind. The bald statement that just because something in the composition contains ethylenic unsaturation makes the entire composition UV curable is insufficient in the absence of a factual basis for that assertion.

Claims 29 and 30 were rejected under 35 U.S.C. 103 over Batting in view of Legrande. This rejection is respectfully submitted to be untenable for the same reasons as the rejection based on Legrande in view of Batting. Regardless of which of the two references is the base to be modified by the other, Legrande still requires graphite as an essential ingredient and Batting does not suggest any reason to eliminate a material which Legrande indicates must be present.

In view of all of the foregoing considerations, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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